1. (Previously Presented) A method of transmitting and receiving data, comprising the steps of:

(a) providing a set of at least 2^m nxn matrices that represent an extension of a fixed-point-free group, each said matrix including n^2 matrix elements, where m is a positive integer and n is an integer greater than 1;

(b) allocating each binary number between 0 and binary 2^m-1 to a respective one of said matrices;

(c) mapping the data into said matrices according to said allocating; and

(d) for each said matrix into which the data are mapped, transmitting said matrix elements of said each matrix.

2. (Original) The method of claim 1, wherein said transmitting includes, for each said matrix into which the data are mapped, successively for each column of said each matrix, transmitting each said matrix element of said each column via a different respective antenna.

3. (Original) The method of claim 1,wherein said transmitting includes, for each said matrix into which the data are mapped, transmitting each said matrix element of each column of said each matrix via a different respective antenna and transmitting each said matrix element of each row of said each matrix at a different respective frequency.

4. (Original) The method of claim 1, wherein said transmitting includes, for each said matrix into which the data are mapped, successively for each column of

said each matrix, transmitting each said matrix element of said each column at a different respective frequency.

5. (Original) The method of claim 1, wherein said fixed-point-free group is a quaternion group.

6. (Original) The method of claim 5, wherein said extension is a super quaternion set.

7. (Original) The method of claim 1, wherein said fixed-point-free group is a $G_{m,r}$ group.

8. (Original) The method of claim 1, wherein said extension is a union of said fixed-point-free group and at least one coset determined by an element of an algebra in which said fixed-point-free group resides.

9. (Original) The method of claim 1, further comprising the step of:

(e) receiving said matrix elements of said each matrix via a known channel.

10. (Original) The method of claim 1, further comprising the step of:

(f) receiving said matrix elements of said each matrix via an unknown channel.

11. (Original) A transmitter for transmitting data, comprising:

(a) a coder for mapping the data into a set of 2^m nxn matrices obtained by providing a set of at least 2^m nxn matrices that represent an extension of a fixed-point-free group and allocating each binary number between 0 and binary 2^m-1 to a respective one of said at least 2^m matrices, each said matrix into which the data are mapped including n^2 matrix elements, m being a positive integer, n being an integer greater than 1, said mapping being according to said allocating; and

(b) at least one antenna for transmitting said matrix elements.

12. (Original) The transmitter of claim 11, comprising n said antennas, each said antenna for transmitting said matrix elements of a respective row of each said matrix into which the data are mapped.